From glowbugs@theporch.com Wed Jan 3 03:05:01 1996
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Date: Wed, 3 Jan 1996 03:01:34 -0600 (CST)
Message-Id: <199601030901.DAA21157@uro.theporch.com>
Errors-To: ws4s@midtenn.net
Reply-To: glowbugs@theporch.com
Originator: glowbugs@theporch.com
Sender: glowbugs@theporch.com
Precedence: bulk
From: glowbugs@theporch.com
To: Multiple recipients of list <glowbugs@theporch.com>
Subject: GLOWBUGS digest 65
X-Listprocessor-Version: 6.0c -- ListProcessor by Anastasios Kotsikonas
X-Comment: Please send list server requests to listproc@theporch.com
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GLOWBUGS Digest 65

Topics covered in this issue include:

Date: Wed, 3 Jan 1996 02:59:07 -0600
From: lbbarley@southwind.net (Bruce Barley)
To: brucerob@epas.utoronto.ca
Cc: glowbugs@theporch.com
Subject: Re: power supply for 6L6 Special
Message-ID: <199601030859.CAA11521@onyx.southwind.net>

>From one Bruce to another - Hi.

If you are using a vacuum tube rectifier (a la' 5U4 family), a large value capacitor input filter will yield a very large peak current to the first capacitor in the filter which can be enough to really shorten the life of your rectifier. For something of the 6L6 single tuber power range, I would suggest nothing larger than 40 mfd for the input filter. If you have access to a RCA Teceiving Tube Manual (mine is RC-29, ca 1973), you will see the voltage drop, versus B+ power delivered is a lot steeper using a capacitor input rather than a choke input filter. And those design curves are specified 40 mfd. If by any chance you are using a half wave, rather than a full wave rectifier circuit, the peak current to the input filter capacitor is even greater! A direct result of this is that the power transformer itself must be derated in total power handling capacity due to this peak

current.

My '61 ARRL handbook shows a 6DQ6 single tuber - rock bound which uses only 8 ufd in each filter section (but with a choke - as a PI filter). Runs 370 VDC to the plate and REGULATED 150 VDC to the screen grid. This is done with an OD3/VR150 regulator tube.

In some of the old televisions, it wasn't uncommon to find several hundred mfd capacitors at 450 VDC in the filter circuits. However, you typically found a fairly stiff input resistor at the start of the whole shebang, and remember that the load current on the supply was virtually STEADY. In your 1 tuber you will have an on-off situation drawing several tens of watts out of that filter. To help in limiting the current surge in the first capacitor, I would look at putting about 270 - 330 ohms (at 10 watts wire wound) in series with the first capacitor. The penalty here is going to cost you about 25 to 30 volts. If you stay at around 8 mfd for your input capacitor, you can get by without this resistor. You may find it advantageous to put your large capacitor as the second capacitor (or even 3rd) in your p/s filter, and use a couple of hundred ohms at 5 watts wire wound between the 1st and 2nd capacitor (and about 150 ohms at 5 watts w/w between the 2nd and 3rd filter capacitor). At 90 ma total draw, you'll drop about 20 volts across the resistor between the 1st and 2nd capacitor. However, your a-c ripple will be down to typically close to 1% coming out of these filters at rated load. And you want to keep better than 10% regulation on your B+ line.

I really like the idea of the screen regulator. It will help keep a more constant load on your power supply in a key up condition, and should help reduce how "yoopy" your on-air signal sounds. So too, will a good bleeder of about 47K at 10 watts. Combine the two, and you probably will have a signal that won't draw too much attention from your O-O. {Do we still have Official Observers? Yes/No}.

If you're into building, there are several circuits in the '61 ARRL handbook for voltage regulators which are multi-tube circuits, not too complex, and DON'T require those chokes which are so hard to come up with in the 10+ hy and 100+ ma ranges. You might take a look and see if any of those tickle your fancy. Once built, they would be useful for a multitude of projects.

Best wishes for '96. Hope to get to work you on 40 with that rig when you get it up and running.

Bruce Barley - KB0PZD
lbbarley@southwind.net

>After learning form some of you about the pit-falls of using a
>transformer as a choke...
===SNIP===

> My 53 Handbook wisely (though vaguely) sayas that good
>regulation is a good thing for a single stage rig, but it doesn't tell me
>what I need: 20%? Any rules of thumb out there? In my experinee a xtal
>alone doesn't drift much with voltage, but then that was down in the 12v
>range. Hmmm. I can get BIG caps, but I think I'll try for the 47 mmf 500
>v ones. At 400v with a good bleeder am I out of the ball-park?>
>Just trying to borrow someone's life's experience :-)
>VE3UWL
>Bruce G. Robertson Dept. of Classics, U. of T.

End of GLOWBUGS Digest 65
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